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VETERINARY PARASITOLOGY

[SUMMARIES OF PAPERS *]

SULPHONAMIDES AND COCCIDIOSIS

(C. HORTON-SMITH, Houghton)

A brief history of the development of sulphonamide therapy in its relation to the control of coccidiosis leads to a consideration of the recent advances made in the applications of sulphonamides to natural outbreaks and the prevention of the disease. Early investigations forming the foundation for all the later and less empirical work, and starting with those of Herrick and Holmes in 1936, were directed towards the discovery of compounds which might effect the cure of established disease. Two sulphonamides, sulphamezathine and sulphamerazine, are highly effective when applied for short periods to groups of chickens in which outbreaks of coccidiosis are imminent as indicated by the observation of symptoms in a few birds within the group. The cost of these compounds and their toxicity limit their use to a few days at a time. Sulphamezathine and sulphamerazine have been used not only for treating existing disease but as coccidiostatic substances administered for some days to chicks during their exposure to known litter infections so that resistance may be acquired without undue risk of severe disease. The advent of sulphaquinoxaline has provided us with a compound which is extremely effective in treating established infections when applied at low concentrations in the food or drinking water. A concentration of 0.05 per cent. sulphaquinoxaline administered to artificially infected chicks gives results comparable to those obtained by using 0.2 per cent. sulphamezathine and may therefore be regarded as four times as effective. Sulphaquinoxaline at therapeutical concentrations is less toxic to chicks than other sulphonamides. Intermittent treatment—which is so designed that high blood concentrations of sulphonamide are available in the blood to meet the more pathogenic stages of the coccidial life-cycle—or continuous feeding of low concentrations of drug, arose to meet the requirements of those methods of management in which large numbers of birds are reared on built-up litter or are later maintained in straw-yards. These two systems of management do not lend themselves to the early recognition of coccidiosis in individual chickens. The form of therapy to be adopted depends on the rapidity with which the coccidial cycle proceeds and where acute disease develops quickly, as it may in *E. tenella* infections. The attempted prevention of disease by chemotherapy is probably the only available means by which losses can be avoided.

* Presented to the meeting of the Association of Veterinary Teachers and Research Workers held at the Royal Veterinary College, London, N.W.1, April 9th, 1952.

VERMINOUS ANEURYSMS

(MYRA L. CLARKE)

In this paper the diagnosis of verminous aneurysms was reviewed, and the results of an investigation into the use of rectal examinations, faecal egg counts and differential leucocyte counts as aids to diagnosis were discussed. Emphasis was laid on the widespread nature of aneurysms and the possible connection between their presence in numerous arteries and the life cycle of *Strongylus vulgaris*. Mention was also made of certain drugs used recently in the treatment of the condition.

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NEW VIEWS ON "SELF-CURE AND PROTECTION"

(J. F. MICHEL, Weybridge)

Self-cure, one of the phenomena of resistance to trichostrongylid nematodes, was first described in 1929 by Stoll, who exposed a lamb to natural infection with *Haemonchus contortus* and found that its faecal egg count rose and after a relatively short time fell abruptly to zero. Thereafter the lamb was refractory to infection or "protected." Although this simple picture did not account for all the facts, there were no further developments until 1950 when Gordon reported that when sheep carrying infections of *H. contortus* were exposed to reinfection, self-cure occurred but that after a time the newly acquired worms reached maturity and the egg count rose again.

Our experiments at Weybridge on self-cure show that infections of *Trichostrongylus retortaeformis* in rabbits established by the administration of a single dose of larvae are normally terminated by self-cure and that their duration bears an inverse relation to their size. In very small infections self-cure does not occur at all. When a small dose of larvae is superimposed on such an infection the effect is additive. When a moderate sized dose is given self-cure occurs but not until the new worms have developed to maturity. When a massive dose is given self-cure is complete within a week.

From these results it is concluded that the occurrence of self-cure is dependent, among other factors, on the presence of a certain quantity of worm material.

The fate of the incoming larvae in reinfection illustrates another phenomenon of host resistance, namely, that of the inhibition of development. When an animal is reinfected with the massive dose, the new larvae burrow into the intestinal mucosa in the normal way but do not re-emerge. Instead they are held in the mucosa and their development is inhibited. They are, however, capable of resuming their development. Sometimes they begin to do this all together, as much as 10 weeks after reinfection, and so kill the host animal. More commonly they resume their development in groups, each group, in developing maturity, evoking the self-cure mechanism which leads to their expulsion, thus making room for the next batch of larvae to develop.

Self-cure induced by reinfection is not a mere immunological curiosity but one of the normal ways in which the

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host's resistance operates. It acts by ejecting adult worms when the worm burden becomes too great. However, an animal that has undergone self-cure is not necessarily worm free but may harbour large numbers of dormant larvae capable of resuming their development when the state of the host's resistance permits them to do so.

Both phenomena appear to be fairly common in infections of other species of nematodes.

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THE SEASONAL VARIATIONS IN THE WORM-EGG COUNTS AND OF THE WORM INFESTATIONS OF SCOTTISH HILL SHEEP

(I. W. Parnell, Edinburgh)

In Great Britain hill sheep are practically the only domestic animals whose environment is in the least comparable to that of their wild ancestors.

Scottish hill sheep are usually gathered just before lambing, which starts about the middle of April; between June and October there are several gatherings, first for marking and clipping, and later for dippings and sales. Prophylactic dosings should, if this be practicable, coincide with gatherings for other purposes.

The worm-egg counts of lambs on most Scottish hills increase during June and early July; then for a few weeks there is a slight fall, followed by another rise of several weeks' duration, after which the worm-egg counts again fall. During the late winter and spring there is another rise, which again lasts for several weeks. The worm-egg counts from gimmers fall during the autumn and reach very low levels in early winter; in late winter and in the spring they rise rapidly, stay high for a few weeks, and then gradually fall again. This pattern of worm-egg production is repeated in each subsequent year of a hill ewe's life.

The first worms of importance to infest lambs are *Ostertagia* spp., followed a few weeks later by *Trichostrongylus* spp. By early winter *Bunostomum trigonocephalum* may be sufficiently numerous to do some harm; there are no subsequent seasonal fluctuations in numbers of this species in hill sheep. The spring rise in worm-egg production in hoggs and in older sheep is caused by an increase in the number of worms, the majority of which are from larvae which are picked up in the second half of March and in April. In hoggs *Trichostrongylus* spp. increase in numbers during the winter; in older sheep their numbers increase later. *Ostertagia* spp. are the main cause of the spring rise in well-managed hoggs and in older sheep. *Cooperia curticei, Chabertia ovina, Oesophagostomum venulosum,* and in a few cases *H. contortus,* all contribute, earlier or later, to the "spring rise."

Since lambing coincides with the increase in the numbers of adult worms, an anthelmintic which safely would remove the young stages, if given to sheep a few days before lambing, would be of great value to Scottish hill sheep.

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ANTHELMINTIC DOSING OF SHEEP

(A. L. Wilson, Auchincruive)

The most effective programme of anthelmintic treatment must be capable of being fitted into normal gatherings, it must kill large numbers of helminths and it must be economical. Research has shown that the egg output patterns of sheep parasites and the parasitic infestations themselves fluctuate throughout the year. Research to determine these facts is prerequisite to any programme of routine treatment. An enormous increase in the number of worms infesting hill sheep occurs in the spring and therefore hill ewes should receive treatment when this increase occurs. Hoggs should be treated on their return from the wintering at the end of March and before being turned out on to the hill. Lambs should be treated in September or October. The whole flock should be treated in January with carbon tetrachloride to kill the liver fluke. Phenothiazine is probably the best anthelmintic for gastro-intestinal parasites but even this has defects; the doses required are too large and it may be too expensive when recommended often. Further research is required to evolve cheap, more efficient, and more concentrated anthelmintics that will kill both immature and adult parasites.

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THE TESTING OF ANTHELMINTICS, WITH PARTICULAR REFERENCE TO THE DEVELOPMENT OF NEW AGENTS

(J. W. G. Leiper, Thurgarton)

A large proportion of the drugs for the removal of helminth parasites are plant products which have been handed down from ancient times. During this century, however, several synthetic chemical compounds have been found to possess anthelmintic properties and in many cases these have now superseded those derived from plants. The fact that phenothiazine, chlorinated hydrocarbons and the piperazine derivatives have come into general use in the veterinary field suggests that other synthetic compounds may be found which possess even greater anthelmintic property.

Because parasitic helminths cannot be cultivated successfully outside the animal body the best available method of testing new compounds is by trial and error with infected animals, but this is a laborious method where large numbers of drugs are involved and it is extravagant in animals and quantity of drug. Various *in vitro* testing methods are in use which enable a large number of compounds to be tested as a preliminary screen.

The old method was to study the effect of drugs on earthworms or leeches, but this gave little information on their anthelmintic action and it has been superseded by tests on the parasitic forms shortly after removal from the body; the criterion of efficiency is based on a comparison of survival times or from kymographic studies on these parasites when immersed in a given concentration of the drug. Baldwin (1948) elaborated the kymographic method by using isolated portions of ascaris muscle; this was shown to be of particular value for the study of santonin-like compounds. Rogers (1944), on the other hand, has elaborated the survival time method by removing a portion of the gut of the host containing the parasite and perfusing through it the compound to be tested. The action of drugs on the free-living stages of parasitic nematodes has been studied extensively by Parnell (1936), who evolved a technique using faecal cultures of the horse strongyles; this method was originally designed for the discovery of disinfectant agents rather than anthelmintics. Free-living nematodes have been rather neglected as test animals. The author has evolved a simple technique using the free-living nematode *Turbatrix aceti*, the so-called vinegar eelworm, and it is considered that this test has much to commend it. The medium used is a natural one for the worm, *i.e.* 50 per cent. vinegar, in which serial dilutions of the compounds can readily be carried out. Phenothiazine (as

well as most of the other anthelmintics) shows considerable activity in this test in contrast to the other *in vitro* tests and it is probably therefore more reliable for the testing of gastro-intestinal anthelmintics.

In vivo tests.—With laboratory animals the helmintholo-gist is badly off in that the parasites of domesticated animals will seldom take in other hosts. He has therefore to resort to the parasites normally acquired by the particular laboratory animal. Extensive studies have been carried out with the intestinal worm *Nippostrongylus muris* in rats and mice but little as yet has come from these experiments. On the other hand, tests with *Litomosoides carinii* in the cotton rat have led to the discovery of the antifilarial piperazine compounds. For this stage of testing the author uses the fowl naturally infected with Heterakis, Ascaridia and Capillaria.

Whatever the method used in a preliminary screening test there still remains further testing to be done in animals infected with the parasites against which anthelmintic action is desired. With the larger intestinal parasites the percentage efficiency can readily be worked out by a comparison of the number of parasites passed out after dosing compared with the total remaining on *post-mortem* examination a week after dosing. In the case of the small gastro-intestinal parasites and with tissue parasites this is not possible and the criterion of efficiency must be based on the effect of treatment on the egg output or larval output of the worms present and a comparison of the worm burdens as found on *post-mortem* examination of dosed animals as compared with undosed controls.

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THE DEVELOPMENT OF THE VETERINARY USES OF BHC

(H. E. Harbour, Berkhamsted)

Benzene hexachloride (BHC) is one of the most versatile of modern insecticides. One of its most valuable uses, early recognised in this country, was for the cure and prevention of sheep scab. Concentrations of the order of 0·0125 per cent. gamma BHC eradicated sheep scab in a single dipping, and the persistence of BHC in fleece ensured a further protective period of some six weeks. This new development has helped the Animal Health Division to exercise much better control, and complete eradication in Britain now seems probable. BHC has also been greatly used overseas for scab control and in many countries scab is becoming a comparative rarity.

Apart from psoroptic scab of sheep, BHC is highly effective against other mange mites, and is now widely used for the treatment of sarcoptic mange of cattle, pigs, dogs, camels and other animals. It has also proved valuable in treatment of otodectic mange of cats, scaly-leg of fowls and, to some extent, demodectic mange in dogs. BHC is highly efficient against the sheep ked and against both biting and sucking lice in sheep, and these parasites have practically disappeared from sheep flocks in this country owing partly to the widespread use of BHC dips and partly to the frequent use of summer dips containing DDT. For the treatment of lice on cattle BHC has been effectively used in the form of a powder containing 5 per cent. of the technical material. Similar powders have been used for control of poultry mites though there is now a tendency to use lindane preparations to avoid the occasional risk of egg or flesh taint following accidental food contamination. Lindane perch paints have given excellent control of poultry mites, an illustration of the fumigant action of BHC.

BHC has given good control of *Ixodes ricinus* on sheep and has been used for this purpose at a concentration of 0·06 per cent. gamma BHC. Used as a dip shortly before lambing this gives complete protection for 10 days and thereafter a gradually waning protection which enables ewes to remain relatively tick-free throughout the lambing season. Higher concentrations have been used experimentally but are not at present an economic proposition. Higher concentrations (0·3 per cent. gamma BHC) have been used in the form of creams for application to lambs to give them temporary protection until they are old enough to be dipped.

Overseas, BHC is being widely and successfully used for tick control, especially for the control of Boophilus ticks. Combined with arsenic, BHC has given good control of East Coast fever in East and South Africa. Its general use at too low a concentration has led, in parts of Africa, to the development of a BHC-resistant tick. In common with some other modern insecticides it is also subject to bacterial degradation when exposed for long periods in fouled dipping washes. Despite these limiting factors, BHC is still a very powerful weapon in cattle tick control overseas.

In the absence of DDT, BHC would have been hailed as the discovery of the century for the control of maggot fly in sheep. DDT is superior because it acts on the adult fly. BHC has little action on the adult fly but kills the young larvae. DDT gives a longer and more reliable protection though BHC would be very useful used in higher concentrations and has found much favour in Australia for dealing with waves of fly strike.

Against warble fly BHC has been found practically valueless. It is considerably less efficient than rotenone preparations for the killing of the warble, and is not effective in preventing warble fly attack.

Methods of application of BHC vary somewhat with the animal, and the parasite to be controlled. Dipping is the only fully effective method for control of sheep scab and is the preferred method for tick control in sheep. A deluge type of power sprayer has proved useful for maggot fly control and would be useful for ked and lice control when the fleece is reasonably short. Direct application of powders is convenient for lice control in cattle, but of little value for other parasites.

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SOME OBSERVATIONS ON *TRICHOMONAS FOETUS* INFECTIONS IN BULLS

(L. P. Joyner, Weybridge)

In an attempt to obtain information on the course of *T. foetus* infections in bulls, the numbers of parasites recovered in preputial washings from a number of bulls at different stages after infection were recorded. The methods used have been described by Joyner and Millar (1952).

Two naturally infected bulls were regularly examined for periods of one and two years respectively. The maximum number of parasites recovered from the first was 35,000 and the minimum was about 5,000. The maximum recovered from the second was 1,200,000 and the minimum was 150,000. The latter animal sustained the heaviest infection which has been recorded in these laboratories. The severity of the two infections appeared to be constant with no tendency for either to increase.

The technique of infecting bulls with an artificial vagina was described (Joyner & Millar, 1952) and an account was

(*Concluded at foot of col.* 1, *p.* 440)

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VETERINARY PARASITOLOGY AND TROPICAL MEDICINE

TO those who have not been in close touch with the progress of veterinary parasitology the recent meeting of the Association of Veterinary Teachers and Research Workers provided an opportunity to ascertain what genus of man it is who busies himself in this field of work. Summaries of the eight interesting papers that were discussed appear elsewhere in this issue of *The Veterinary Record* and will bring to the notice of many who could not attend the meeting the kind of work that is being done.

A glance at this group of summaries reveals one outstanding characteristic, that of great variety of subject. Here are papers dealing with arthropods, protozoa and with an arbitrary group called helminths the three main divisions of which the zoologists regard as being as different from one another as chalk from cheese. Nevertheless, all are placed together under the heading of " Veterinary Parasitology " and we may well ask what it is that holds these workers together and what is the common ground on which they meet ?

Enquiry reveals that this particular apportionment of the field of veterinary study harks back to the time when it was possible within the compass of one human brain to hold all of the available information on parasites. The inadequacy of the human brain at this later period and the unsuitability of the division of knowledge alike bear evidence of a marked advance : the word " Parasitology " we must conclude is a relic of the past and it is in the contemplation of such relics that the march of progress can be appreciated most satisfactorily. Could there be any better evidence of the advancement in another field of endeavour than the contemplation of those interesting mechanical relics that take part in the annual race from London to Brighton ? And could there be any better names for those outworn individuals than " Alchemy," " Natural History " and " Parasitology " ?

We look, then, into the future of research and clearly see a pattern of increasing specialisation, the hatching of protozoologists, entomologists and helminthologists who have no knowledge of the rest of the wider field of research, and the disappearance of the word " Parasitology " from the covers of those encyclopaedic tomes that weight our shelves. Not only do we see the future pattern but we see things taking on the shape, and we feel the satisfaction of achievement.

But what of advancement in the teaching field ? The teaching of parasitology has always been closely linked with tropical medicine and here the position with regard to progress is less happy. In spite of the disruption of two world wars we find ourselves still with greater responsibilities in the tropics than has any other nation and our profession is expected to provide the teaching of disease control in the foreign field. The political emancipation of the peoples of those tropical countries and the rapidly increasing population make the conservation of animal life a matter of ever growing urgency. It is we who are looked to for the provision of workers both through our own veterinary services abroad and through the international Food and Agriculture Organisation, and it is we who are expected to develop the use of the new insecticides and parasiticides that research has revealed and that now await our exploitation in tropical regions.

The best use cannot be made of our materials, however, unless our men are properly trained and here, it seems, are opportunities for advancement that are allowed to lie unused. Progress in the techniques of laboratory culture, in the knowledge of disease vectors and of the parasites of laboratory animals now makes it possible to maintain many of the tropical helminths, arthropods and protozoa in our schools and universities. The speed of air travel facilitates this possibility by providing means for the repeated introduction of fresh material. What may be of even greater importance, however, is the ease with which the teaching staff of schools of tropical medicine can now keep in close personal touch with the progress of operations in the tropics themselves. It is surely an essential for good teaching that it should come, not from mere book knowledge alone, but from the practical experience that gives it an emotive quality so stimulating to the student. The teaching of tropical medicine by such men in a well-equipped central school is one of our most urgent needs. While there can be no doubt that some vocational training is necessary in the particular country to which a new recruit is to be sent, that training should be supplementary to a wider and more fundamental course of instruction given in such a central school. Laboratory training and visits to the field along with some few workers at the site of operations cannot substitute for this.

We must all view with trepidation the doubtful outcome of the present race between increase of world population and increase of world production. In the protection of animal health we are taking a hand in what may be regarded as the biggest world problem of the near future and our responsibilities are very great. Development is needed *now*, and if we are to help in providing the little extra time so needed for the solution of this great problem we should begin at once with the proper training of the workers. Nothing would help more than the re-introduction of a course of instruction and a qualification in Tropical Veterinary Medicine.

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given of the attempts to infect four further bulls by this method.

In three bulls infections were established successfully and the parasites could first be recovered 8 to 21 days after infection. The fourth animal resisted numerous attempts to infect by both the artificial vagina technique and by the injection of infected preputial washings into his prepuce.

No increase in the titre of agglutinins in the sera was ever detected in these bulls and so far all attempts to demonstrate local antibodies similar to those described by Pierce (1947) in the female have been unsuccessful.

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"THE STAR" WHITE CITY DOG SHOW

Animal Health Trust to Benefit

A Pet Dog Show, which is to include sheep dog trials and a National Dog Tournament, is being organised at the White City Stadium on July 30th by *The Star* newspaper. There will be two full programmes respectively at 2 p.m. and 5.30 p.m., and the profits from both items are being donated to the Animal Health Trust. The programmes, which are primarily intended to be of interest to the general pet-owning public, include such items as displays by army guard dogs, road safety dogs, obedience tests, dogs and fashions, in addition to a number of ordinary classes. On previous occasions dog shows of this kind put on by *The Star* have been very pleasant occasions, and have provided an agreeable family outing. Tickets, which vary in price from 1s. 6d. to 5s., are obtainable either from the office of *The Star* or from the White City.

CLINICAL COMMUNICATION

POST-OPERATIVE HERNIA IN THE DOG
The Problem of Suturing

WILLIAM HENDERSON, M.R.C.V.S.,
HAMPTON

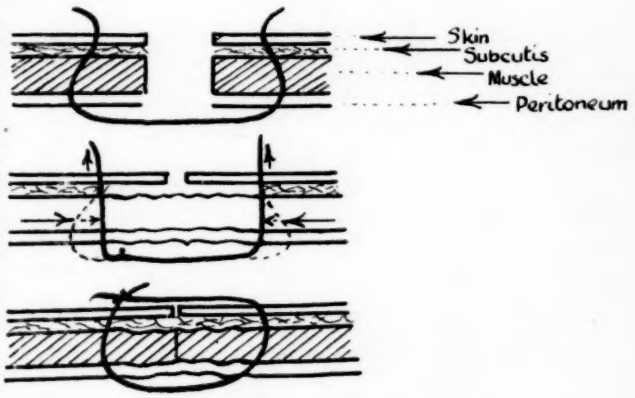
Two cases of disrupted surgical wounds causing herniation of abdominal contents have occurred in our hospital practice during the past year. Each has happened in a heavy bitch following hysterectomy in which a greatly distended uterus was removed by the longitudinal middle line approach via *M. rectus abdominis*. At each hysterectomy, closure of the abdominal wall was effected by means of buried sutures of chromic catgut, No. 4/0 being used to close the peritoneum and No. 3/0 the muscle fascia, which is fairly normal procedure with us. In one subject, a middle-aged Bull bitch, a small piece of omental fat protruded after four days, and complete disruption of the abdominal wound took place about the end of the sixth day ; in the other, a middle-aged Chow, prolapse of omentum and intestine occurred without warning seven days after the operation, on the day fixed for the bitch's discharge from hospital.

It is agreed that this complication following the use of buried sutures is often due to contamination of the surgical wound. Other factors may, however, be concerned, and Armistead (1949), in the United States, has stated some of the important mechanical causes of poor wound healing. They include inappropriate size or type of suture material, improper suture tension, excessive ligation, too much tissue trauma, and improper immobilisation of tissue. There are, in addition, some non-mechanical factors that may play a part in this unfortunate sequel. Christopher (1949), also in the United States, includes malnutrition, chronic anaemia, and vitamin C deficiency in this category, and he mentions that there may be idiosyncrasy to absorbable suture material.

Keeping in mind that bacterial contamination is probably the most important cause, it may be that faulty technique in peritoneal closure comes after that. If the peritoneal sutures are not in complete apposition, a small piece of omentum may slip through and become incarcerated, and a discharge appears at some part of the suture line. Thus healing is delayed, and if the catgut now disintegrates the wound breaks open. Again, the use of too heavy catgut and far too large cutting-edge needles may result in too much tissue trauma, causing a subsequent breakdown. Finally, Riser (1950) mentions that operational shock and lowered nutritional intake may also predispose to tissue oedema in the region of the incision. He asserts, further, that excessive amounts of saline given post-operatively increase the water-logged state of the tissue, and he advocates the use of saline only for animals that have a definite need for it.

One might, I think, add to this list the danger of a very boisterous recovery period in a heavy animal following barbiturate anaesthesia. During this time much can be done towards keeping your animal as quiet as possible following abdominal surgery by housing it in a very warm, dark room, and the use of luminal sodium or pethidine hydrochloride to diminish pain is often indicated ; but some dogs will throw themselves about in a most alarming manner when trying to get on their feet. Our Bull bitch made very heavy weather of trying to stand up, repeatedly crashing down, and her stertorous breathing could be heard all over a large building. Even before they begin to come round, the exaggerated abdominal breathing of these brachycephalic types must throw a great deal of strain on sutures. The Chow vomited frequently while recovering consciousness, and the stress on abdominal sutures during the act of vomition is enormous, as anyone who has had an abdominal operation will testify.

Whatever the reasons, herniae occurred in these two cases. The Bull bitch was operated upon as an emergency immediately after complete herniation was observed. After general anaesthesia had been induced, a piece of contaminated omentum was ligated and excised. The swollen edges of the muscle wound were freshened lightly, excessive haemorrhage being avoided. This is a good plan where one is dealing with friable tissue, since excessive débridement may result in haemorrhage sufficient to separate the edges of the wound. It was decided to re-suture with silk worm gut, using a technique explained by Armistead (1950) for through-and-through suturing. The needle is inserted into the skin about $\frac{1}{8}$ inch from the edge of the wound, and then passes laterally to take a bigger " bite " of the muscle and peritoneum on each side. (See diagram.)



The through-and-through suture (Armistead)

The muscle and peritoneum are thus pulled tightly together, while the skin is loosely approximated, allowing swelling to occur without cutting of the tissue. Interrupted nylon sutures closed the skin. Procaine penicillin was administered for about four days, during which time a sero-sanguineous discharge was present, but swelling was fairly slight, and the bitch soon appeared to be quite comfortable. In fact, she jumped about rather too much for my liking. At the eighth day the wound was only slightly moist, and the sutures were removed. The bitch was then discharged, and she made an uneventful recovery.

In the case of the Chow, the edges of the muscle wound were oedematous and appeared to be very weak indeed. The strength of any gut suture is very seriously diminished in the presence of infection, and it was decided to re-suture through and through with silver wire. The silver wire must be large enough to prevent much tissue cutting, and at the same time it has to be malleable. The sutures were inserted about $\frac{1}{4}$ inch from the wound edge, and the needle was passed through muscle and peritoneum in an outward direction as before. Good splintage of the tissue was obtained, and nylon sutures closed the skin. There was rather a lot of swelling, which did not appear to irritate the animal unduly, but discharge was negligible. The sutures were removed seven days later, and the bitch recovered uneventfully.

In these cases the question of the suture material best suited for the purpose, and the technique to be followed, always requires careful thought. Where silk is used to close the abdominal incision by through-and-through sutures of tension, I find that stitch abscesses are very common, and these sutures leave a lot of scarring behind. Buried layers of chromic catgut are probably most popular. Catgut is efficient enough in new wounds, but, as noted, it is less than efficient where infection is present. Some years ago it was thought that nylon would provide the answer in the search for the ideal suture material. Unfortunately, even after simple operations like the spaying of young bitches, deep sutures of nylon often set up abscesses. I have seen these abscesses develop as long as three years after the spaying operation, and a great many cases of chronic, localised peritonitis have been met with following the use of nylon for peritoneal closure.

We are often told that the use of through-and-through sutures in abdominal wounds is crude technique, and the critics throw up their hands in horror because they are not used in human surgery. But I am not at all certain that layers of buried sutures in these two cases would have produced just as good a result as the through-and-through sutures achieved. At any rate, the rapid healing of the wounds was very satisfactory. Would it have been so if buried sutures had had to be absorbed or encapsulated before complete tissue repair took place?

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EQUINE PARALYTIC RABIES

Ranchers in the Rupununi district, savannah country adjoining the Rio Branco district of Brazil, are faced with the loss of many of their horses from a disease described as equine paralytic rabies, which is said to be caused by the bite of infected vampire bats. This (states the Georgetown Correspondent of *The Times*) was the diagnosis of the Washington Bureau of Animal Husbandry, to which a Government veterinary officer sent the brain of a dead horse. Rupununi cattle have previously suffered occasionally from a similar disease, but not horses.

A natural enemy of the vampire bat is the white owl, which is known in the colony but does not frequent the Rupununi district, though it is a protected bird in Brazil. The problem now is to reduce the numbers of bats, as the loss of horses is a serious matter for the ranchers, who lost nearly all their stock four years ago from another disease. The Rupununi is poor cattle country, but contains what is believed to be the world's largest ranch—2,400 square miles in area—together with several small ranches.

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ROYAL SOCIETY OF MEDICINE

The President and officers of the Royal Society of Medicine for 1952-53 have been elected as follows: President, Dr. F. M. R. Walshe; Immediate Past-President, Lord Webb-Johnson; Hon. Secretaries, Dr. A. T. M. Wilson and Mr. J. C. Ainsworth-Davis; Hon. Treasurers, Mr. L. R. Broster and Dr. S. Cochrane Shanks; Hon. Librarians, Mr. H. J. Seddon and Professor Alan Kekwick; Hon. Editors, Dr. E. R. Cullinan and Sir Heneage Ogilvie.

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WEEKLY WISDOM

Both the voluntary principle and legal control and regulation are needed. The real issue is not so much what the State should do and what society should do, as when and in what conjuncture society should be the agent, and when and in what conjuncture the agent should be the State.—Sir ERNEST BARKER ("Principles of Social and Political Theory").

ANNOTATION

VIRUS PNEUMONIA OF PIGS

In 1938 Lamont and Shanks drew attention to the occurrence of a virus pneumonia in pigs in the British Isles which they termed piglet influenza or infectious pneumonia.

The condition described appeared to be very similar to the Ferkel grippe described by Köbe and Waldmann (1933, 1934 and 1935), and the authors adopted the name piglet influenza on account of this similarity. Blakemore and Gledhill (1941) published observations on an outbreak of swine influenza in England.

The history and symptoms of the disease described by Blakemore and Gledhill have many points in common with that described by the German and Northern Ireland workers and some resemblance, also, to the disease described by Dorset *et al.* (1922) and Shope (1931a). It would appear that the disease described by the Cambridge workers was intermediate in its relationship between the piglet influenza disease of Northern Ireland and Germany and the American swine influenza (Shope).

Papers published by Gulrajani and Beveridge (1951) and Betts (1952) drew attention to the fact that these workers, using material derived from East Anglia and Northern Ireland, have been unable to recover a virus resembling the influenza viruses of Lamont and Shanks (1938), Blakemore and Gledhill (1941) or Shope (1931a) from cases of infectious pneumonia in pigs. The influenza types of virus seem to have disappeared in these areas, but the Cambridge team has shown that a virus differing from the influenza types is present in this coughing disease of pigs which has hitherto been regarded as symptomatic of influenza in the pig.

Swine influenza was apparently first recognised in America as a clinical entity in the autumn of 1918. Koen, according to Shope (1931), called this "new" disease of pigs "'flu" because of the similarity in symptoms to those shown by human beings affected by the pandemic of influenza which was then raging.

The American disease affects young pigs of 10 to 14 weeks. The onset is sudden, with sneezing and coughing as prominent symptoms. Pneumonia is present and in severe cases symptoms of respiratory distress (blowing and thumping type of respirations) are marked. Shope (1931a) gives the following clinical features of the disease: "Swine influenza is essentially a disease of autumn and early winter and reaches epizootic proportions each year. The onset is sudden and the incidence in an affected herd is practically 100 per cent. Fever, anorexia, prostration of an extreme type, cough and a peculiar abdominal type of respiration, are salient features of the disease. The animals cry out when handled, which has been interpreted as evidence of muscular tenderness. The period of illness is short, varying from two to six days, and in uncomplicated cases the recovery is almost as sudden as the onset. The mortality is stated to range from 1 to 4 per cent. Fatal cases exhibit an extremely oedematous type of broncho-pneumonia."

Lewis and Shope (1931) isolated a haemophilic bacillus from the majority of their cases and they designated this organism as *H. influenzae suis*. It was isolated from lung tissue, bronchial mucus and from the blood stream in over 20 per cent. of these cases.

As regards the pathogenicity of *H. influenzae suis* for swine, 11 of 13 attempts to reproduce the clinical disease by intranasal instillation proved entirely negative. The remaining two animals developed an illness that could easily have been mistaken for influenza, and in both cases the

organism was recovered at necropsy, but in the second case (the point was not tested in the first) the experimental differed from the natural infection in not being contagious. A normal susceptible hog submitted to contact with the infected animal failed to develop the disease. Shope (1931b) in a further paper records the presence of a filterable virus in swine influenza and the rôle which it plays in the pathogenesis of the disease. Shope (1932) emphasised that the virus alone produced a trivial infection, but in conjunction with the *H. influenzae suis* the typical disease resulted. The period of incubation recorded for contact experiments was four days.

The piglet influenza disease described in Northern Ireland attacks young pigs. Lamont and Shanks (1938) state that "this is essentially a 'house' disease of pigs producing its most serious effects in young pigs from two to six weeks old. . . . It is uncommon to find infection present in animals over 12 months, but we have met with such cases on farms where the disease has been introduced for the first time." The symptoms of the Northern Ireland disease (Lamont & Shanks, 1938) are not so dramatic as those described by Shope. Sneezing and listlessness are the first indications, then spasms of coughing. In experimental transmissions this symptom has been noted as early as the third day after infection. "If the animals are driven some of the piglets will show evidence of acute respiratory distress with heaving or thumping at the flank." An acute rise of temperature is not a feature of the Northern Ireland disease. The authors state that "occasionally temperatures of 104° or 105° F. are recorded, but in a litter the majority of affected animals will record temperatures varying from 102° to 103° F." The mortality rate varies. In winter time in cold, damp houses, up to 100 per cent. of infected pigs may succumb and under good conditions 10 to 30 per cent. losses may occur, "but in either case the survivors are affected with a chronic spasmodic cough until they are ultimately slaughtered. Many affected pigs thrive badly and a fatal attack of acute pneumonia may develop if the housing conditions are bad. Diarrhoea may develop in 10 to 20 per cent. of affected pigs."

Lamont and Shanks (1938) stress the consolidation of the lung involving "the anterior and dependant portions of the lungs." The affected lung has a greyish lymphoid appearance on section. Occasionally, lobes on the superior border may be found consolidated and of a reddish colour. A fibrinous pleurisy and pericarditis and epicarditis may be present. Occasionally, abscess formation is noted, but this is usually associated with the presence of pyogenic bacilli (*C. pyogenes*). Lamont and Shanks' findings agree with those of Shope in cultivating *H. influenzae suis*, but these workers also record that other organisms may be present. They also record that they were able to set up some cases of pneumonia with cultures of *H. influenzae suis* (10 positive out of 15 experiments), but no experiment was conducted to test the infectious features of this experimental disease. Waldmann (1934) was unable to set up pneumonia with his strains of *H. influenzae suis*.

The disease described by Blakemore and Gledhill (1941) affected only pigs of 8 to 12 weeks in age. Temperatures were not significantly high, but 20 of the 60 affected pigs showed symptoms of pneumonia and prostration. In a few cases delirium was noted at the height of the attack and two of the pigs so affected "suffered from lateral curvature of the head for a few weeks following recovery." (In Northern Ireland it is reported that pigs are occasionally seen "holding the head twisted to one side." These cases respond to sulphamethazine or penicillin therapy and are thought to have a middle ear infection.) Blakemore and Gledhill (1941) were able to isolate *H. influenzae suis* in three out of six field cases cultivated.

Persistence of Virus in Lung Tissue

Köbe (1934) claimed that the virus of swine influenza persists for a long time in the lungs and that the disease may be transmitted by mixing healthy pigs with the survivors of an outbreak. Lamont and Shanks (unpublished observation) also found virus present in the lungs of fat pigs slaughtered at seven or eight months of age and which had been showing symptoms of spasmodic coughing and on *post-mortem* examination showed chronic pneumonic lesions. (This virus was not identified.) Blakemore and Gledhill (1941) also found persistence of virus but these workers make a very significant observation in referring to coughing and unthriftiness: "Indeed, we have evidence that such is the case, since we have demonstrated a virus in other outbreaks of pneumonia amongst store pigs in which sneezing has not been a feature. *H. influenzae* was not usually recovered from such cases and other bacteria such as *P. suiseptica* seemed to play a part in its aetiology. While the investigation is not yet complete we have reason to believe that ***an infectious pneumonia of virus origin is common in this country***."

Lamont and Shanks (unpublished observations) in experiments carried out in 1940 were able in a number of cases to transmit infection to etherised mice and after seven passages in the mice the infection was returned successfully to the pig. Ferrets were also infected. On several occasions, however, they failed to infect either mice or ferrets and were only able to transmit infection from pigs to pigs. Material sent to Asplin in Weybridge and Beveridge in Cambridge from coughing pigs showing marked pneumonia at *post-mortem* examination did not provide these workers with strains of influenza virus but both workers reported the presence of a second virus (personal communications). Gulrajani and Beveridge (1951), as mentioned earlier in this annotation, have shown that a virus other than the influenza type of virus is present in infectious pneumonia of the pig; a disease very similar indeed to the influenza disease described by Lamont and Shanks (1938).

Gulrajani (1951) records that he was unable to find the influenza virus in pigs 10 days subsequent to infection although the experimental pigs developed pneumonia. He states, however: ". . . this conclusion is in disagreement with the opinion of certain workers that in swine influenza the virus can commonly be isolated for long periods (Blakemore & Gledhill, 1941; Hjarre *et al.*, 1949).

"The explanation of this conflict of views is probably twofold:—

"1. Swine influenza has been confused with another infection of pigs' lungs, 'infectious pneumonia of pigs,' which in reality is a distinct disease and probably also due to a different virus (Gulrajani & Beveridge, 1951). Swine influenza has perhaps also been confused with Ferkel grippe, the relationship of which to infectious pneumonia of pigs has not yet been determined. In these two latter diseases the lesions in the lungs macroscopically resemble swine influenza and the infectious agent persists longer than in swine influenza.

"2. The results reported in this paper do not conflict with the idea that in swine influenza the virus might occasionally persist for periods of longer than 10 days. It is well known that in some virus diseases a small percentage of recovered cases remain carriers long after the great majority of animals have ceased to harbour the virus and this might be so with swine influenza."

Pullar (1948, 1949) in Australia reported the presence of an "infectious pneumonia of pigs" due to a virus and distinct from influenza. Gulrajani and Beveridge (1951) reported the results of investigations with material derived from outbreaks in East Anglia and in Northern Ireland and showed that the form of infectious pneumonia which is most common is due to a virus different from swine influenza.

It is well known that influenza disease in the human undergoes periods of recession and it is not unreasonable to assume that there may be a similar occurrence in pigs. Shope (1941) has shown that swine influenza virus may persist for long periods in a "masked" form in lung worms, but in Northern Ireland, although some 500 pigs are examined yearly at the Veterinary Research Division, no cases of obvious lung worm disease have been reported for at least six years.

Betts (1952) suggests the name "virus pneumonia of pigs" for this highly common infectious pneumonia or "coughing disease" of pigs. Betts gives an account of the symptoms and these bear a very close resemblance to those described by Lamont and Shanks (1938) for their piglet influenza disease. It appears, therefore, that these workers have described and confused as one entity two pneumonic conditions in the pig each caused by a virus. Fortunately, strains of the piglet influenza virus were sent to the Medical Research Council influenza unit, and Glover and Andrews (1943) compared the Northern Ireland strains with Blakemore's strain, Shope's American strain and a human influenza strain. These workers had no difficulty in transmitting either the Cambridge or Northern Ireland strains to ferrets, the ferrets showing a "typical diphasic febrile response." After several passages both strains were adapted to mice. The results of the experiments carried out by Glover and Andrews (1943) seem to show "that strains of virus isolated from pigs in the British Isles have a complex antigenic structure and, generally speaking, fall between the authentic human strains of recognised type, *e.g.*, P.R.8, W.S., etc., and the Shope porcine strain. The transference of these strains to ferrets can be effected fairly easily, but their establishment in mice requires several serial passages before overt pneumonic lesions are produced. In this respect they seem to bear a closer resemblance to human than to the American swine viruses." In their summary they comment further: "It is still difficult to obtain a clear conception of the antigenic relations of these viruses. The impression has been gained that neither of the two strains examined is more closely related to the other or to the Shope pig virus than it is to a human influenza A (P.R.8)."

The possibility of a virus mutation occurring has also to be considered, but at present there is no evidence to support this view.

Betts (1952) comments on the wide distribution of virus pneumonia of pigs and endeavours to show the economic loss due to it. In Northern Ireland this "coughing disease," or virus pneumonia of pigs, is very prevalent at present; every owner of fattening pigs comments on this coughing symptom and losses from pneumonia are by no means uncommon. Where warm, comfortable houses are provided the economic loss is not serious.

Control.—Betts (1952) in his paper refers to the establishment of a pneumonia-free herd. In Northern Ireland the use of farrowing crates in isolation and the transference of the sow and litter to individual arks on pasture enables breeders to select sows and litters free from virus pneumonia on clinical grounds, but these methods will be defeated if the litters are transferred to rearing and fattening houses where coughing disease is present.

The position at present would seem to be that the widespread coughing disease of pigs associated with a chronic pneumonia is due to a virus (or possibly viruses) distinct from the influenza type of virus, and the name suggested by the Cambridge workers, "virus pneumonia of pigs," is a logical one.

H. G. LAMONT.

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ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations, June-July, 1952

List of Successful Candidates

(*Concluded*)

Dublin

First Examination

Chemistry only

Johnston, J. B.

Second Examination

Both Subjects

Carroll, Miss Una — Cawdery, M. J. H. (P)

Physiology only

Barry, K. T. — McElroy, R.
Broderick, T. I. — Mackessy, E. J.
Deboys, D. C. — McManus, D.
Dunne, L. G. — Magee, B. F.
Fogarty, W. P. — Nunn, W. R.
Gordon, James

Anatomy (including Histology)

Boyd, J. R. — Huey, J. A.
Brownell, T. A. — Nolan, J. J.
Conroy, P. J. — O'Brien, J. P.
Crowley, J. P. — O'Neill, T. J.
Eastwood, P. J. — Poole, D. B.
English, R. G. — Roche, J. V.
Evans, J. A. — Smith, K. J.
Fleury, A. T. — Stuart, N. C.
Gahan, M. A. — Taylor, B. O'C.
Harris, Miss M. D. — Wilson, D. J.
Harris, R. E.

(P) Denotes Credit in Physiology.

Third Examination

Hygiene only

Abrahamson, D. (credit) — Guven, M. N.
Ballesty, J. J. — Hally, W. P.
Byrne, J. G. — Hannan, John
Dowdall, F. J. — Harbord, R. S. (credit)
Fenlon, P. J. — Hartigan, P. J.
Flavin, M. J. — Henehan, M. D.
Foley, J. E. — Jameson, J. G.
Goold, M. C. (credit) — Keane, P. A.
Guerin, W. A. — Kent, Martin

Littlewort, M. C. (credit)	Rhatigan, P. J.
Marsh, J. H.	Strickland, K. L.
McDonald, P. J.	Twomey, Thomas
Noonan, J. D.	Tynan, A. R.
O'Brien, M. W.	Walsh, M. C.

Pathology only

Butler, G. M.	Johnson, R. E.
Chapman, R. W.	Lee, David
Conway, D. A.	Linton, J. A.
Deeney, E. E.	McAuley, B. F.
Deevey, W. E.	McCarthy, James
Dowling, J. P.	McDermott, Patrick
Driscoll, C.	McGinley, M. D.
Flanagan, Wm.	Nelson, W. A.
Gallery, G. J.	O'Connell, D. F.
Gilchrist, E. W. (credit)	O'Hara, D. P.
Hatch, Charles (credit)	O'Hart, Patrick
Hernon, P. C.	O'Rourke, Daniel
Hurley, M. C.	Pyne, W.
Hurley, T. M.	Roche, L.

Final Examination (Old syllabus)

Horan, Henry

Final Examination (Revised syllabus)

Burke, Jeremiah	Kirkpatrick, R. W.
Clarke, Joseph	Mills, D. R.
Cosgrove, J. S.	Murphy, P. A.
Dexter, E. d'H.	O'Connor, Michael
Dougan, P. D.	O'Riordan, Miss M.
Fitzmaurice, T. G.	Petris, M. A.
Gallagher, Eugene	Rogers, E. P. S.
Glazier, D. B.	Ruane, E. J.
Hart, Francis	Sheehan, D. P.
Hatch, John	Waddell, A. R.

QUESTIONS IN PARLIAMENT

Foot-and-Mouth Disease

"A Steady Improvement."

Sir I. Fraser (July 17th) asked the Minister of Agriculture the present position with regard to foot-and-mouth disease.

Sir T. Dugdale: I am glad to say that there has been a steady improvement in the position in recent weeks. There have been 29 outbreaks of foot-and-mouth disease in the first half of July as compared with 63 and 43 in the first and second half of June. Disease is still active in parts of Kent and in the Dumfriesshire and Cumberland area, and a further case has occurred in Devon this morning. With the improvement of the position in the Midlands controlled area restrictions are being removed from most of the Midland counties to-night. The southern counties of England remain subject to some risk owing to the serious position in France, where 39,000 fresh outbreaks occurred in the second half of June. Of these 5,800 were in departments immediately opposite the South Coast, and I am afraid that it will be necessary to retain controlled area restrictions in southern England for some time longer.

Sir I. Fraser: While recognising the unusual skill of the experts at Pirbright, may I ask my right hon. Friend whether he can assure us that the experiences of this very grave outbreak during the past year will lead to every possible research being made at Pirbright, including researches for suitable enclaves in the matter of inoculation?

Sir T. Dugdale: Most certainly.

Mr. N. Macpherson (July 17th) asked the Minister of Agriculture what steps he is taking to test the claim of a person, of whose name he has been informed, that she knows a cure for foot-and-mouth disease which was successfully applied in 1924.

Sir T. Dugdale: There are several known cures for foot-and-mouth disease, but herds in which animals were kept alive for treatment would remain sources of infection for many weeks. To allow farmers to adopt cures would be incompatible with the present policy, which aims at stamping out infection by the immediate slaughter of infected and contact animals.

Mr. Macpherson: Irrespective of the slaughtering policy, would it not be a good thing, in the interests of scientific knowledge and veterinary practice, to try out all cures which are suggested and to establish the necessary conditions of isolation for the purpose?

Sir T. Dugdale: All suggested cures are very carefully considered. This is the kind of subject which will, no doubt, be considered by the Departmental Committee which I propose to set up.

Mr. E. Johnson: Is my right hon. Friend aware that many small farmers appear to be quite ignorant of the more elementary precautions which they might take to prevent the spread of the disease? Will he impress upon them the importance of reporting to the Department's veterinary officers any unusual symptoms in their cattle?

Sir T. Dugdale: I am grateful to my hon. Friend for his intervention. We try at all times to impress upon farmers the importance of doing this, but his supplementary question will draw extra attention to the subject.

Mr. G. Brown: How soon shall we know about the appointment of the Departmental Committee, its members and when it will start work?

Sir T. Dugdale: Perhaps the right hon. Gentleman will put a question down about that, but I hope that the committee will be able to begin its work in the early autumn.

Mr. Peart (July 17th) asked the Minister of Agriculture what official representations have been made to the Food and Agriculture Organisation of the United Nations to secure combined Governmental action to eradicate foot-and-mouth disease.

Sir T. Dugdale: No official representations have been made to the Food and Agriculture Organisation of the United Nations, as they are already considering with other international bodies a scheme for dealing with foot-and-mouth disease in the Western European countries.

Mr. Peart: Will the Minister himself initiate discussions on this matter? After all, we did take inter-Governmental action on the Colorado beetle when we ratified the Convention last year, and is it not possible to do something like that about foot-and-mouth disease?

Sir T. Dugdale: As far as comparing this problem with that of the Colorado beetle is concerned, perhaps I might explain to the House that foot-and-mouth disease is a very much more complicated subject than Colorado bettle infestation, because the beetle is very different from a highly infectious virus which may occur in a number of different forms. Infestation by beetles may be dealt with simply by spraying, but nothing like that position exists in the case of foot-and-mouth disease.

In some countries where it is endemic, various cures are adopted; in other countries where it is not endemic a slaughter policy is appropriate. May I also tell the House that the former Chief Veterinary Officer of the Ministry, Sir Thomas Dalling, is now chief veterinary consultant to the F.A.O., and is taking a very prominent part himself in discussions about the scheme.

Mr. Peart: Will the right hon. Gentleman agree that whilst there is scientific consultation, he himself in a previous debate admitted that infection was being carried by birds in their flight from France, and that the foci of infection should be attacked there? If that is so, do we not need inter-Governmental action such as that embodied in the European Plant Protection Organisation?

Sir T. Dugdale: There again I think this is one of the problems that will have to be considered by the Departmental Committee, and I am bearing these questions in mind the whole time, to see whether there is any useful action that I can take.

Mr. N. Macpherson: Is my right hon. Friend aware that this is not a problem for us or for Western Europe alone, that the disease has spread to Canada, and that it has undoubtedly become a world problem and one for the United Nations?

Mr. Peart asked the Minister of Agriculture what proposals he has received from the French Government as to joint action against foot-and-mouth disease in each respective country.

Sir T. Dugdale: None, Sir.

Mr. Peart asked the Minister of Agriculture what will be the terms of reference of the proposed Departmental Committee to enquire into the present foot-and-mouth epidemic.

Sir T. Dugdale: The composition and terms of reference of this committee have not yet been settled, but every aspect of the present system of control will come under review by the committee.

Mr. Peart: There must not be any complacency about it.

Sir T. Dugdale: I can assure the House that there will be no complacency about it but, as I said in announcing the committee, we must deal with this question of the infectious period before we ask our officers to turn to their committee work.

Mr. N. Macpherson (July 17th) asked the Minister of Agriculture what is the normal interval of time between the notification of a case of foot-and-mouth disease and official confirmation of it.

Sir T. Dugdale: Four hours.

Mr. Macpherson: Is my right hon. Friend aware that there

have been cases of longer intervals than that, and while four hours may be the normal figure is he satisfied that everything is done in every case to ensure that the surrounding neighbourhood is informed of the circumstances at the earliest possible moment?

Sir T. DUGDALE: Yes, Sir. It is true that in certain cases the time has been longer but in other cases it has been shorter.

Mr. BALDWIN: Would my right hon. Friend consider instructing his veterinary officers in every county to go to the Farmers' Union meetings and give farmers instruction about the early stages of the disease?

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SLAUGHTERINGS

Mr. PETER FREEMAN (July 17th) asked the Minister of Agriculture how many cattle have been slaughtered during the past 12 months as a result of foot-and-mouth disease; what is the total weight of meat from this source; how much has been entirely destroyed; how much has been considered fit for human consumption; and how much has been sold as fit only for animal consumption.

Mr. NUGENT: Complete figures are only available for the 12 months ended March 31st, 1952. 7,853 cattle, 5,068 sheep and 4,296 pigs were slaughtered during that period. No estimate can be given of the total weight of these animals. The carcases of 4,297 cattle, 4,340 sheep and 2,423 pigs were salvaged. The weight of the meat so salvaged was 967 tons of which 958 tons were fit for human consumption and 9 tons were condemned.

Mr. C. S. TAYLOR (July 17th) asked the Minister of Agriculture what consultations he has had with the Medical Research Council about the epidemic of foot-and-mouth disease with a view to combating this plague.

Sir T. DUGDALE: The scientific programme of the Foot-and-Mouth Disease Research Institute is under the supervision of the Agricultural Research Council. The Council works in the closest touch with the Medical Research Council, and there is also frequent interchange of ideas and experiences between the Medical Research Institute at Mill Hill and the Foot-and-Mouth Disease Institute at Pirbright.

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Slaughter of Animals (Ministerial Responsibility)

On Monday last Sir R. CARY asked the Prime Minister if he has any further information to give the House in regard to bringing the Report of the Rosebery Committee up to date, particularly in respect of placing all central Government functions in relation to horse slaughterhouses and knackers' yards under one Ministry.

The PRIME MINISTER: Yes, Sir. The Minister of Food will assume general responsibility for the conditions governing the slaughter of animals, including horses, at slaughterhouses and knackers' yards in England and Wales. The Secretary of State for Scotland will remain responsible in Scotland. The necessary Orders under the Ministers of the Crown (Transfer of Functions) Act, 1946, will be made in due course.

COMMITTEE ON THE SLAUGHTER OF HORSES

The Minister of Food and the Secretary of State for Scotland, Mr. Churchill continued, are setting up a Committee to consider the law and practice relating to the slaughter of horses in slaughterhouses and knackers' yards and to recommend whether any changes are desirable.

The Home Office will remain responsible for the law about cruelty other than at the time of slaughtering and the Ministry of Agriculture and Fisheries will retain powers about cruelty to animals during transit.

Sir R. CARY: Is my right hon. Friend aware of the appreciation felt in all quarters of the House at the prompt and most satisfactory way in which he has dealt with this matter?

Lieut.-Colonel LIPTON: Is the Prime Minister aware that all remedial measures will not provide an adequate solution unless and until there is some price control over the amount charged for horse meat?

The PRIME MINISTER: I try to keep aware as much as possible of what is going on.

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PIT PONIES (SLAUGHTER)

Mr. PETER FREEMAN (July 15th) asked the Prime Minister if he is aware that 1,656 horses and ponies employed in mines were destroyed by the National Coal Board when brought up because of unfitness or old age in 1949; that 1,415 were destroyed in 1950; that these are apart from those destroyed as a result of accidents underground; what supervision by Government inspectors exists of the way in which these horses and ponies are slaughtered by the Board above ground; whether he will arrange this matter to be considered by the enquiry into the Rosebery Report recently announced by him; and whether the question of the provision of homes of rest for industrially-employed horses may also be included in the terms of reference of the enquiry.

THE MINISTER OF FUEL AND POWER (Mr. GEOFFREY LLOYD): I have been asked to reply.

Pit ponies when no longer fit for work in the mines are, in accordance with the Coal Mines Act, either placed in reputable rest homes or humanely destroyed. There is no power under the Act for an inspector to supervise such destruction, but the National Coal Board arrange for it to be done on their premises by a competent person and under supervision by their officials.

Mr. FREEMAN: In view of the fact that these young ponies are taken down the mines at a very young age and are there for 12 or 15 years without the light of day and amidst the dirt, darkness and heat, does the right hon. Gentleman not think they deserve some special consideration, rather than going to the knackers' yards as, in effect, they do now?

Mr. LLOYD: The Regulations under the Coal Mines Act were reviewed and brought up to date in 1949 after that very careful review by the right hon. Gentleman the Member for Blyth (Mr. Robens), who consulted the Pit Ponies' Protection Society, the Royal Society for the Prevention of Cruelty to Animals and the National Equine Defence League, who agreed.

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CLOSE SEASON FOR DEER (COMMITTEE)

Colonel GOMME-DUNCAN (July 15th) asked the Secretary of State for Scotland whether he can now announce the appointment of a committee to enquire into the question of a close season for deer in Scotland.

Mr. J. STUART: Yes. I have appointed a Committee, under the Chairmanship of Sheriff Maconochie, with the following terms of reference:—

"To consider the desirability of introducing a close season or seasons for deer in Scotland and the manner in which, and the safeguards for agricultural and other interests under which, any close season or seasons they may recommend should be made effective; and to report."

The members of the Committee are: Robert H. Maconochie, Esq., O.B.E., Q.C.; James Adair, Esq., O.B.E.; A. Gordon Chalmers, Esq., F.R.I.C.S., F.L.A.S.; The Rt. Hon. Lord Glentanar, D.L., J.P.; James McBoyle, Esq.; Michael G. McDiarmid, Esq.; Brigadier G. D. K. Murray, O.B.E., M.C., T.D., A.D.C., D.L.; Malcolm Nicolson, Esq.; James Ritchie, Esq., C.B.E., M.A., D.SC., F.R.S.E.

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CIRCUS, GLASGOW (ANIMAL ACT)

Mr. RANKIN (July 15th) asked the Lord Advocate whether his attention has been called to the mauling by a tigress of an elephant in a circus at Glasgow on June 25th; and whether, in view of the natural antipathy that exists between the species concerned, he will institute proceedings against the circus proprietors, of whose name he has been informed, for cruelty contrary to the provisions of the Protection of Animals Act, 1911.

THE LORD ADVOCATE (Mr. J. L. CLYDE): I have caused enquiry to be made into the circumstances of the incident at the circus performance in Glasgow on June 25th last. Following on the incident, the animals were examined by an inspector of the Society for the Prevention of Cruelty to Animals, and there was no sign of injury to either. Further, within an hour, both animals were examined by a veterinary surgeon who certified that there was no sign of injury to either of them and that they were both quite settled. He further certified that he had seen the act since, both in public performance and in training, and saw no evidence that the animals' normal relationship during the performance had been in any way altered. Consequently, there is no evidence to warrant proceedings being taken for a contravention of the Protection of Animals (Scotland) Act, 1912.

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WARBLE FLY ORDER

Mr. LAMBERT (July 17th) asked the Minister of Agriculture whether he is satisfied that the Warble Fly Order is being observed; and how many prosecutions there were in 1951 for the infringement of this Order.

Sir T. DUGDALE: The reports received from the veterinary officers of my Department show that there was an improvement last year in the compliance with the Warble Fly Order, but there is still room for further improvement. There were 21 prosecutions in 1951 and 15 convictions.

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ARTIFICIAL INSEMINATION STAFFS (PAY)

Mr. SNOW (July 17th) asked the Minister of Agriculture what wage rates are stipulated by his department for staff carrying out

artificial insemination services in schemes which have received his recognition in Staffordshire.

Sir T. Dugdale: The artificial insemination service in Staffordshire is provided by the Milk Marketing Board under licence from my Department, and wages and conditions of employment are matters for arrangement between the Board and its staff.

Mr. Snow: Is the right hon. Gentleman aware that the public assumes there will be a fair wages clause in any such contractual agreement with this body? Is he also aware that there are complaints that these artificial inseminators do not get a fair wage and that they are liable to be on call at all hours of the day?

Sir T. Dugdale: Perhaps the hon. Gentleman might draw to my attention any particular case. In the country as a whole 32 of these centres are now functioning. In England and Wales 24 are operated by the Milk Marketing Board, six by other organisations and two by the Ministry. In the two run by the Ministry the wages and conditions of the staff are my responsibility.

Mr. Snow: Would the right hon. Gentleman answer my question? Will he see there is a fair wages clause in any contract or agreement into which he enters?

Mr. G. Brown: Does the right hon. Gentleman accept the implication that the Milk Marketing Board in this matter are acting as his agents?

Sir T. Dugdale: No, in this particular case the arrangements for wages are definitely the concern of the Milk Marketing Board.

Mr. G. Brown: And the union?

Sir T. Dugdale: And the union.

Mr. Snow: Is there not a monopoly here?

NOTES AND NEWS

Diary of Events

July 30th.—Annual General Meeting of the West of Scotland Division, B.V.A., at Glasgow (North British Station Hotel), 2.30 p.m.

July 30th.—Summer Meeting of the Lancashire Division, B.V.A., at Crewe and Nantwich, 2 p.m. **(See Notice.)**

Aug. 13th.—Meeting of the Editorial Executive Sub-committee, B.V.A., at 36, Gordon Square, W.C.1, 2.30 p.m.

Sept. 7th—13th.—Seventieth Annual General Meeting and Congress of the British Veterinary Association, at Harrogate.

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B.V.A. Congress at Harrogate

Application for Tickets

Application forms for tickets required in connection with the forthcoming Congress of the Association to be held at Harrogate in September are issued with this number of *The Veterinary Record*. As indicated thereon, applications should be received by the General Secretary not later than August 18th. It will be a great convenience, however, if application for tickets is made as soon as possible before that date.

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Congress Golf Competitions

Those wishing to enter the competition for the "Simpson" Trophy and the Ladies' Competition for the "Dunkin" Trophy are requested to notify Mr. J. O. Powley, M.R.C.V.S., 99, Station Parade, Harrogate, who is in charge of the arrangements.

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PERSONAL

Birth.—Norman.—On July 14th, 1952, to Hilary, wife of John Norman, a daughter.

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Forthcoming Marriage.—Burman—Stockton.—The engagement is announced between Peter Burman, M.R.C.V.S., only son of Mr. and Mrs. F. H. Burman, 2451, Stratford Road, Hockley Heath, Birmingham and Margaret G. Stockton, eldest daughter of Mr. and Mrs. J. T. Stockton, 154, Audlem Road, Nantwich, Cheshire.

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Marriages.—Garland—Deacon.—On June 7th, 1952, at Holy Trinity, Penn Street, Bucks, John Garland to Rachel Deacon.

Hickman—Wilkins.—On May 12th, 1952, at All Saints, Spelsbury, Oxon, John Hickman, M.R.C.V.S., of End Farm, Northleigh, Witney, to Nancy Wilkins, of "Evencroft," Charlebury, Oxon. Mr. Paul Stone, M.R.C.V.S., was best man.

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R.C.V.S. OBITUARY

Maynard, William Frederick, Lynton, Mile Hill, Romsey, Hants. Graduated London, May 20th, 1892. Died July 14th, 1952; aged 81 years.

O'Kell, Donald, 173, Sheen Lane, East Sheen, S.W.14. Graduated London, July 17th, 1908. Died July 11th, 1952.

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THE LATE W. F. MAYNARD, M.R.C.V.S., ROMSEY, HAMPSHIRE

Mr. William Frederick Maynard, who, as we record above with deep regret, died on July 14th, 1952, at the age of 81 years, was educated at King Edward VI School, Southampton, and the Royal Veterinary College, London, qualifying as a veterinary surgeon on May 20th, 1892. He entered active practice immediately and retired 50 years later—in 1942.

He was the third generation of veterinary surgeons, his father being William Maynard, M.R.C.V.S., who died in 1913, and his grandfather, also William Maynard, M.R.C.V.S., the founder of the practice based on Romsey, Hampshire.

A friend writes of him: "William Frederick Maynard was a good veterinary surgeon who commanded the confidence and respect of all his colleagues and of an extensive clientele in a wide agricultural area. He was essentially a 'cattle and horse practitioner'—a designation which implied his great experience in those branches of veterinary practice.

"A brusque and forthright manner concealed a very kindly heart. He lived an exceptionally busy, hard working life, and took great interest in all agricultural activities but more particularly the Romsey Horse Show, held at Broadlands, Romsey—the premier show of Hampshire—of which he was Hon. Veterinary Surgeon and Committee member. He was present at a Committee meeting less than a fortnight before he died.

"He was proud of his profession and took exceptional pride in his 'turn-out' whether it were a pony and trap or—later—a motor car. He was a man of good presence who could not tolerate untidiness, and was meticulous in all he did."

Mr. Maynard leaves a widow, who worked by his side in the practice, a son and three daughters—one of whom is married to a local farmer—to all of whom we extend our sincere sympathy in their sad bereavement.

The funeral took place on Friday of last week at Romsey Abbey, and was attended by a very large gathering.

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Foot-and-Mouth Disease

As will be seen from our Parliamentary columns, the Minister's reassuring statement regarding the foot-and-mouth disease position in this country has not diminished the flow of questions on every aspect of incidence and policy. Sir Thomas Dugdale had announced earlier (*Vet. Rec.* **64.** 403) that, while he had the fullest confidence in the ability of his veterinary service to deal with the disease, a Departmental Committee of enquiry would be appointed when the present epidemic had abated. Cumberland, Devon and Kent remain the scenes of recurrent outbreaks, the total number of which, at midweek, since November 14th last was 535, involving 32,306 cattle, 26,694 sheep, 11,295 pigs and 57 goats. The amount paid in compensation up to July 5th (507 outbreaks) was £2,382,759.

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THE BRITISH OLYMPIC EQUESTRIAN TEAM

The Selection Committees of the British Horse Society and the British Show Jumping Association announce the final selection for the three-day event team and the jumping team for Helsinki. Each team must consist of three riders and six horses. The riders may only be replaced in case of accident. Any three of the six horses are permitted to compete on the final day.

The Three-day Event Team will be (giving rider, horse and owner in that order):—

Mr. J. R. Hindley, Speculation, Mr. J. R. Hindley; Mr. A. E. Hill, Stella, Major J. Miller; Captain M. Naylor-Leyland, Dandy, Mr. and Mrs. P. A. Hutton.

Reserve horses: Starlight, Mrs. J. R. Baker; Bambi V, Miss M. Hough; Crispin, The Countess of Dudley.

The Jumping Team will be (giving rider, horse and owner in that order):—

Lieut.-Colonel H. M. Llewellyn, O.B.E., M.F.H., Foxhunter, Lieut.-Colonel H. M. Llewellyn; Mr. W. H. White, Nizefela, Mr. W. H. White; Lieut.-Colonel D. N. Stewart, D.S.O., M.C., Aherlow, Mr. E. Holland-Martin.

Reserve horses: The Monarch, Mr. W. Hanson, M.F.H.; Nobbler, Miss M. Whitehead; Craven A, Mr. G. B. Robeson.

XUM

The three-day event team left Filton Airport, near Bristol, on July 24th, and the show jumping team leaves Blackbush Airport on July 30th.

The Three-day Event

This event will take place at Helsinki on July 30th and 31st and August 1st and 2nd. Twenty-three nations will compete and it is perhaps the most gruelling and exacting test for horse and rider in the world.

A simple dressage test to demonstrate the suppleness, obedience and correct training of the horse is performed on the first day. On the second, horse and rider must complete a severe endurance test consisting of about 23 miles across country within a certain time. The course includes many miles of rough roads and tracks in addition to a 5-mile stretch of some 30 solid and very varied obstacles and a three-mile steeplechase course.

On the third day the horses, having been examined for soundness, must jump a small course of fences in the Stadium: this test to prove that, in spite of the severity of the second day, horse and rider are still in accord.

Undoubtedly the second day must be regarded as the deciding factor and the selectors have paid considerable attention to this.

The Grand Prix des Nations for Jumping

The Grand Prix des Nations for Jumping is the final event of the Olympiad. Twenty-one nations will compete for this coveted award on August 3rd in the Stadium.

Each horse must jump the complete course twice. The course will extend over about 1,200 yards and will consist of from 16 to 18 varied and formidable fences, varying in height from 4 feet 6 inches to 5 feet 3 inches.

As in the case of the three-day event team, the main problem of the selectors has been to select the three best combinations of horse and rider and not individual horses or riders.

Foxhunter and Nizefela have earned their places as much by their numerous international successes in the last three years as by their recent brilliant form. Aherlow has proved herself in the last year as our third best Olympic horse, showing herself to be an exceptionally good mare in international competitions. She jumped brilliantly in the Nations Cups at Nice, Rome and Madrid in 1951, winning the individual prize as well as the Puissance at the last-named. She did not show quite the same form at the White City and Dublin, but was again brilliant when winning good classes at Paris and Brussels.

This year, after being jarred at Western Counties, she jumped indifferently at Dublin, but showed excellent form in Lucerne under conditions similar to those expected at Helsinki. Ridden by Lieut.-Colonel Stewart, she won the Grand Prix Militaire and jumped two clear rounds in the Nations Cup and throughout went consistently well. Mr. Alan Oliver's mounts, Red Star and Talisman, did not show their usual brilliant form abroad and this was probably due to travel sickness. Aherlow is undoubtedly one of the best Olympic horses in the world, and Lieut.-Colonel Stewart has been nominated to ride her in the Grand Prix des Nations.

The selected jumping team will remain in training at Aldershot.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax:

Cambs.—Piggery, Middle Way Drove Premises, Bere Fen, Over, Cambridge (July 15th).

Cumberland.—Brisco Hall Farm, Brisco, Carlisle (July 14th).

Essex.—Clavering Hall Farm, Clavering, Newport (July 14th); Brookside, Strawbrook Hill, Great Leighs, Chelmsford (July 15th).

Hants.—Bamptons Farm, Walhampton, Lymington (July 14th); Prior Farm, Bramshott, Liphook (July 15th).

Leics.—The Homestead, Claybrook, Lutterworth, Rugby (July 15th).

Norfolk.—Newington Sheds, Booton, Reepham, Norwich (July 15th); Twaite Hill Farm, Aldborough, Norwich (July 17th).

Somersetshire.—The Piggeries, Bulford, Curland, Taunton (July 14th); Currey Mallet, Taunton (July 16th); Shortwood Farm, Litton, Bath; and Laucin Farm, Wambrook, Chard (July 17th).

Surrey.—Ashley Court Farm, Ashtead Woods, Ashtead (July 15th).

Sussex (W.)—Eastlands, West Chillington Lane, Billingshurst (July 15th).

Wilts.—Roughleaze Farm, Colne (July 17th).

Foot-and-Mouth Disease:

Cumberland.—Harker Grange Field, Houghton, Carlisle (July 14th); Newby West Farm, Wigton Road, Carlisle (July 17th).

Devon.—Chown's Pool, Plymtree, Cullompton (July 17th).

Dumfriesshire.—McCheyneston, Auldgirth and East Manse; Forest Farm, McCabbington Farm and Rose Hill Farm, Auldgirth, Dumfries (July 15th).

Kent.—Tun Meadow, Wye, Ashford (July 16th).

Fowl Pest:

Isle of Ely.—Cook's Green, Doddington, March (July 17th).

Warwicks.—220, Allesley Old Road, Coventry (July 17th).

Swine Fever:

Derbyshire.—62, Moor Lane, Bolsover, Chesterfield (July 14th).

Hunts.—Norman Cross, Yaxley (June 16th).

Lancs.—North Farm, Moss Side, Westby-with-Plumpton (July 14th).

Lincs (Lindsey).—Holbeck Farm, Horncastle (July 18th).

Salop.—Iron Bridge Road Piggeries, Madeley, Wellington (July 15th).

Staffs.—Unit Farm, 16 M.U., R.A.F. Station, Hopton (July 16th).

Suffolk (W.).—60, High Street, Lakenheath, Brandon (July 19th).

Surrey.—Elm Farm, Farleigh, Warlingham (July 18th).

Warwicks.—Back Street, Ilmington, Shipston-on Stour (July 15th); 83, and 121b, Grange Road, Longford (July 16th).

Yorks (W.R.).—Featherstone Lane Allotments, Featherstone (July 16th).

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AUSTRALIAN SCHEME FOR "RHODES SCHOLARSHIPS IN REVERSE"

On Thursday of last week Sir John Lienhop, the Agent-General for Victoria in London, announced a scheme for providing fellowships for British students, tenable in Victoria. The fellowships, provided by the British Memorial Fund as a "gesture of loyalty, gratitude and affection" to the British people for their "rôle in saving civilisation in the second world war," have been provided by public subscription in Victoria and are described as "Rhodes scholarships in reverse."

The first four will be in natural science, industrial research, virology and agriculture, and will be for £A.1,000, which will cover travelling expenses to and from Melbourne and 10 months' living expenses in the State. The upper age limit is 35. Applications will be received during the next three weeks by Sir John Lienhop, Victoria House, Strand, W.C.2. Fellowships are restricted to those of British stock with 10 years' residence in Britain. Applicants should give full qualifications and indicate what use would be made of a fellowship.

The Agent-General is Chairman of the London Selection Committee and other members are Lady Albemarle, Lord Huntingfield, Sir Clive Baillieu, Sir Vincent Tewson and Sir Angus Gillan.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

THE RELATIONSHIP BETWEEN ANIMAL WELFARE SOCIETIES AND THE VETERINARY PROFESSION

Sir,—It will be within the recollection of the British Veterinary Association that a Ministerial Committee was appointed to enquire into the activities of animal welfare societies as they impinge on the Veterinary Surgeons Act. It is within the knowledge of many that that Report has been received but the contents have not yet been intimated to the profession or the public.

In view of the extreme importance of an amicable and understanding relationship being developed between the animal welfare societies and the veterinary profession, surely the time has arrived for the Minister to permit publication of this document. May we know from our controlling body, the Royal College, what steps are being taken in respect of this very vital matter?—Yours faithfully, H. Kirk, 658, Finchley Road, London, N.W.11. *July 19th*, 1952.

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R.C.V.S. COUNCIL ELECTION

Sir,—I am sorry to be late in this acknowledgment, but owing to my absence overseas it was but recently that I learned of the re-election to the Council of the Governing Body of the profession.

Perhaps being on the other side of the world at the moment makes this a matter of special gratification to me, and I should like to thank those who supported me.—Yours faithfully, J. R. Barker. New Zealand. *July 9th*, 1952.